

### IN THE SPECIFICATION

Please amend the paragraph beginning on page8, line 21 as follows:

A turbo decoder algorithm used in an article by S.S. Pietrobon, "A Simplification of the Modified Bahl Decoding Algorithm for Systematic Convolutional Codes", *Int. Symp. Inform. Theory & its Applic*, pp.1073-1077, (Nov. 1994) can be described as Eq. 1 to Eq. 4 by using equations defined in the article by Pietrobon in 1998 as follows:

$$D_k^{i,m} = \frac{2}{\sigma^2} (x_k^i + y_k Y_k^{i,m}) \quad \text{Eq. 1}$$

$$A_k^{i,m} = D_k^{i,m} + \bigcirc_{j=0}^P A_{k-1}^{j,b(j,m)} \quad \text{Eq. 2}$$

$$B_k^{i,m} = \bigcirc_{j=0}^P (B_{k+1}^{j,f(i,m)} + D_{k+1}^{j,f(i,m)}) \quad \text{Eq. 3}$$

$$L_k = \bigcirc_{m=0}^{2^v-1} (A_k^{1,m} + B_k^{1,m}) - \bigcirc_{m=0}^{2^v-1} (A_k^{0,m} + B_k^{0,m}) \quad \text{Eq. 4}$$

where  $k$  is a time, a sequence or a stage and is positive number with "0".  $i$  is an input of  $k^{\text{th}}$  sequence and  $j$  is a  $(k+1)^{\text{th}}$  input for a forward state metric or a  $(k-1)^{\text{th}}$  input for a reverse state metric. The  $i$  and  $j$  are "0" or "1".  $m$  is a state of a trellis diagram and  $v$  is number of memory in a recursive systematic encoder. The  $m$  is positive integer including "0" and the  $v$  is positive integer.  $\sigma^2$  denotes distribution of input symbols for an additive white gaussian noise (AWGN).  $X_k$  is  $k^{\text{th}}$  transmit information bit of the

AWGN.  $Y_k$  is  $k^{th}$  transmit information bit of the AWGN.  $Y_k^{i,m}$  is a generating code word for  $k, i, m$ .  $D_k$  is  $k^{th}$  metric.  $A_k$  is a  $k^{th}$  forward state metric.  $b(j,m)$  is a  $(k-1)^{th}$  reverse state, which is related  $k^{th}$  state between input  $j$  and state  $m$ .  $\hat{A}$  is a function  $E$  defined as  $\prod_{j=0}^1 A_k^j = A_k^0 E A_k^1 = \log_e(e^{A_k^0} + e^{\underline{A_k^1}} e^{\underline{A_k^0}})$ .  $B_k$  is a  $k^{th}$  reverse state metric.  $f(i,m)$  is  $(k+1)^{th}$  state related to  $k^{th}$  state with input  $i$  and state  $m$ .  $L_k$  is a log likelihood ratio.